

A PRELIMINARY STATEMENT ON THE TREATMENT OF *ENTAMOEBIA HISTOLYTICA* INFECTIONS BY 'ALCRESTA IPECAC.'

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I. ALCRESTA IPECAC.

At the Tropical School Auxiliary Military Hospital in the end of June, 1916, the treatment of *Entamoeba histolytica* infections by emetine hydrochloride was given up almost entirely in favour of treatment with 'alcresta ipecac.'

Alcresta ipecac. is the trade name for an adsorption compound of ipecac. alkaloids with hydrated aluminium silicate (Fuller's earth). It is made up in the form of tablets, and each tablet is advertised to contain the alkaloids from 10 grs. of Rio ipecac. U.S.P. Allan (1916) calculates in his 'Clinical Notes on the Use of Alcresta Ipecac. in Amoebic Dysentery' that, 'since U.S.P. ipecac. contains as a minimum 2 per cent. total alkaloids, Rio ipecac. assaying 1.5 per cent. emetine and 0.5 per cent. cephaeline, each tablet will therefore contain as a minimum 0.15 grs. of emetine.'

It is stated of alcresta ipecac. that it 'passes through the stomach unchanged and liberates the alkaloids in the alkaline intestinal

secretions,' and it is claimed that patients taking emetine in this form suffer little, if at all, from the nausea and sickness that are so unpleasant a feature of some other forms of emetine treatment.

In America, alcresta seems to have been used mainly in cases of pyorrhoea, but Allan in the paper quoted above describes the use of alcresta in ten cases of amoebic dysentery. His experience bears out the statement as to the ease with which the drug can be taken in this form; he is of opinion, however, that emetine given hypodermically is 'twice as efficacious' as emetine given by the mouth in the form of alcresta tablets. It may be noted that the cases he was dealing with were cases of acute dysentery. Except for the cases quoted in Allan's paper, we do not know of any other published account of the treatment of amoebic dysentery with alcresta ipecac.

The experience at the Tropical School Auxiliary Military Hospital this year fully confirms the claim that emetine given in this form causes little or no inconvenience to the patient. Hypodermic treatment with emetine hydrochloride was not much used owing to the practical inconvenience in dealing with large numbers of cases. Previous to the use of alcresta at this hospital, the men were being given emetine hydrochloride tablets orally, but even where these were coated with sandarac varnish there were many complaints of nausea and vomiting. Since the use of alcresta began there has been practically no trouble of the kind.

We are not at present able to state with certainty the amount of alcresta that constitutes an effectual 'treatment,' and the length of time over which a 'treatment' should extend. In view of the great demand on the accommodation in the military hospitals, it would clearly be of much practical value to discover what is the minimum amount of alcresta that can be trusted to clear the average case from *E. histolytica* cysts, and what is the shortest time into which such a treatment can be compressed. At present we are unable to make any final statement on these points. In the beginning, the amounts given were very various in the different cases, and the whole plan was tentative; later, we adopted a standard 'course' of fourteen days' treatment with ten tablets daily, five at night and five in the morning, i.e., $1\frac{1}{2}$ grs. emetine per day for a fortnight.* Where a patient 'relapses' after such a course, he is at once put

* More recently still, a number of cases have been put on a 5 days' course of 1.5 grs. per diem.

on a second, and if need be on a third. This is our present practice. In most cases one 'course' is found sufficient; and on the whole, as will be judged from the detailed account following, the use of alcresta is justified so far by the results. The majority of the patients have responded well to the treatment, and after being subjected to a pretty severe microscopical test, have been discharged from hospital as cured.

II. MATERIAL AND METHODS

Without an exception, the cases treated were in the chronic condition of amoebic dysentery, i.e. were 'carriers.' The men were soldiers who had become infected with *E. histolytica*, mainly in Gallipoli, Salonika, Egypt, and Mesopotamia. Examination of thin films of the patients' faeces under the microscope revealed the presence of the cysts of the entamoeba. When a man was discovered to be a cyst-carrier, he was forthwith put on a 'course' of alcresta, and throughout this treatment a specimen of his faeces was examined daily in the laboratory, so that we might judge whether the drug was taking effect. These daily examinations of a large number of cases involved a great deal of additional work, but it was felt that only by this careful control could we estimate the real efficacy of alcresta in getting rid of the infection. Later on, when the value of the drug has been more widely recognised and tested, it will probably be unnecessary, as indeed it would be impossible in general practice, to make daily examinations over long periods; but during this period of trial we lay great stress on close and sustained microscopical control. We hope to be able later on to formulate some less laborious rule for general procedure.

As will be judged from what follows, it is very important when testing any emetine compound that the daily observations should not cease with the treatment, but should extend over *as long a period after treatment as is practicable*.*

* It must be pointed out that, though daily examination was aimed at, this was not always found possible in practice. For various reasons, examinations were often made only every second or third day over certain periods; the intervals were sometimes longer still. Hence, it must be understood that when we speak in this paper of 'a week's negative interval,' we do not necessarily mean a period in which six consecutive daily examinations were recorded. 'A week's negative interval' may be based on six consecutive examinations in one man, and on only three or four in another. We have not been able to do more than make an approximation to the ideal daily examination test.

III. ANALYSIS OF THE CASES

From June 22nd until November 30th, 1916, eighty-one carriers of the cysts of *Entamoeba histolytica* treated with alcresta ipecac. were examined in the way described. Three of these cases were treated in the Royal Infirmary; the rest were in the Tropical School Auxiliary Military Hospital.

For convenience, we may group these seventy-six men in the following scheme:—

- i. Cases still under treatment.
- ii. Cases that left hospital as soon as their treatment had stopped.
- iii. Cases observed after treatment.
 - A. Cases that did not relapse after a first course of alcresta.
 - B. Cases that relapsed after a first course of alcresta.
 - (a) Cases that remained negative after a second or third course.
 - (b) Cases that remained 'refractory' to continued treatment with alcresta.

These sub-divisions may now be considered separately.

i. *Twelve men whose treatment began in the middle or end of November, 1916, had not at the time of writing this been observed for a sufficiently long time to justify an opinion as to their 'cure.'* At present they have all become negative for *E. histolytica* cysts. We hope to include them in a future report.

ii. *Thirteen men who left hospital immediately treatment had stopped* (Cases I, II, IX, X, XII, XIII, XIV, XVI, XVII, XIX, XXXVI), or so soon after treatment (Cases XVIII and LX) that it was not possible to keep them under observation for a satisfactory post-treatment period. These cases all ceased to pass cysts a few days after treatment began. Cases I and XVIII, indeed, after becoming negative, passed a few cysts during treatment. But all, with the exception of XII, XIV, and XXXVI, which were discharged after shorter periods, remained negative under observation for periods of three weeks and over.

Experience shows, however, that with alcresta, as with other preparations of emetine, a negative period *during* treatment is no

real guarantee of cure; the patient may begin to pass cysts again when the inhibiting effect of the drug on the development of the amoeba has ceased. We find the majority of cases that 'relapse' in this way, do so in the first week after treatment stops; but a relapse at the end of fourteen days is not uncommon, and we have known a case to 'relapse' after twenty-four days. It is therefore to be recommended that patients should be observed for *at least* a fortnight, and if possible for three weeks, after treatment and before they are discharged as cured.* This question of 'relapsing' cases is more fully discussed in a later section of this paper.

The following is a copy of the Army Council Instruction No. 1,354 of 1916 with regard to the Treatment and Disposal of Convalescents from Dysentery:—*'A patient suffering from dysentery who is transferred to the United Kingdom from an Expeditionary Force will remain in the Central Hospital to which he has been admitted at least 14 days, during which period two bacteriological and protozoological examinations of his dejecta will be carried out, with an interval of at least seven days between them.'*

It may be pointed out here that, according to this instruction, no less than seventy-three out of seventy-six cases might have been discharged from the Tropical School Hospital and the Royal Infirmary to a dysentery camp at one time or another while they were under treatment, and this whether they had really ceased to be carriers of pathogenic cysts or not. For seventy-three of seventy-six, and among them some of the most 'refractory' of the cases, have shown, under the temporary influence of alcresta, two consecutive negative examinations at a week's interval.

iii. *Fifty-six men whom it was found possible to keep under close observation for a satisfactory period after treatment.*

A. A majority, thirty-eight, showed excellent response to the treatment, and remained negative after treatment for periods

* We must explain that throughout this paper we use 'cure' with a certain reservation. In practice it is not found possible to keep the men in hospital during war-time for very long post-treatment observation. It is only in certain cases where, for reasons unconnected with dysentery, the men were detained in hospital over long periods that we were able to show that cysts were not passed during observation extending after treatment for as much as seven weeks. We should be inclined to account cases 'cured' that passed no cysts for three weeks after treatment; but so little is yet known of the life-conditions of *E. bistolytica*, and of the mode of recurrence of amoebic dysentery, that it is unwise to talk too confidently about 'cures.'

varying from one week four days, to seven weeks (in the case of three men detained in hospital for reasons unconnected with dysentery).

The detailed observations on these thirty-eight cases are set out in the following table:—

TABLE I.
Cases that did not pass cysts after first treatment with Alcresta

Case No.	Treatment with Alcresta			Period of Consecutive Negative Examinations	Total No. of Consecutive Negative Examinations	No. of Consecutive Negative Examinations after Treatment
	Begun	Ended	Total Emetine			
V	June 22	July 25	15.5 grs.	July 7 to Aug. 8 ...	20	8
VII	July 21	Aug. 20	22.5 grs.	July 22 to Sept. 20 ...	39	18
XV	Aug. 22	Sept. 28	27 grs.	Sept. 2 to Nov. 23 ...	63	41
XXI	July 18	Aug. 18	31.8 grs.	Aug. 14 to Oct. 6 ...	34	30
XXII	Aug. 24	Sept. 4	9.9 grs.	Aug. 23 to Sept. 25 ...	26	17
XXIII	Aug. 23	Sept. 4	9.35 grs.	Aug. 24 to Oct. 10 ...	30	21
XXIV	Aug. 23	Sept. 4	9.9 grs.	Aug. 24 to Sept. 25 ...	26	16
XXVI	Aug. 2	Aug. 18	11.25 grs.	Aug. 7 to Sept. 20 ...	24	17
XXVII	July 28	Aug. 18	11.25 grs.	Aug. 22 to Sept. 18 ...	18	18
XXVIII	Aug. 2	Aug. 20	13.5 grs.	Aug. 5 to Sept. 20 ...	32	19
XXIX	Aug. 20	Aug. 27	5.5 grs.	Aug. 12 to Sept. 21 ...	34	22
XXX	Aug. 3	Aug. 20	19.5 grs.	Aug. 9 to Sept. 30 ...	20	11
XXXII	Aug. 3	Aug. 20	25.5 grs.	Aug. 5 to Sept. 21 ...	38	24
XXXIV	Aug. 3	Aug. 20	25.5 grs.	Aug. 5 to Sept. 21 ...	26	13
XXXVII	Sept. 5	Sept. 25	30 grs.	Sept. 7 to Oct. 17 ...	26	13
XXXVIII	Sept. 11	Sept. 28	24 grs.	Sept. 11 to Oct. 12 ...	22	9
XXXIX	Sept. 14	Sept. 30	22.5 grs.	Sept. 15 to Oct. 12 ...	22	9
XL	Sept. 11	Sept. 28	25.5 grs.	Sept. 12 to Oct. 10 ...	23	10
XLI	Sept. 11	Sept. 28	24 grs.	Sept. 15 to Oct. 11 ...	20	8
XLII	Sept. 19	Oct. 3	19.5 grs.	Sept. 19 to Nov. 9 ...	32	20

TABLE I.—Continued.

Case No.	Treatment with Alcresta			Period of Consecutive Negative Examinations	Total No. of Consecutive Negative Examinations	No. of Consecutive Negative Examinations after Treatment
	Begun	Ended	Total Emetine			
XLIII	Sept. 12	Sept. 28	25.5 grs.	Sept. 14 to Nov. 11 ...	44	33
XLIV	Oct. 5	Oct. 19	19.5 grs.	Oct. 7 to Nov. 16 ...	27	18
XLV	Oct. 3	Oct. 29	24 grs.	Oct. 6 to Nov. 24 ...	39	10
XLVI	Oct. 6	Oct. 23	19.5 grs.	Oct. 9 to Nov. 9 ...	22	12
XLVII	Oct. 16	Nov. 8	33 grs.	Oct. 21 to Nov. 23 ...	21	8
XLVIII	Oct. 5	Oct. 19	19.5 grs.	Oct. 5 to Nov. 16 ...	30	19
XLIX	Oct. 12	Oct. 26	19.5 grs.	Oct. 14 to Nov. 7 ...	20	9
L	Oct. 4	Oct. 22	19.5 grs.	Oct. 12 to Nov. 23 ...	24	18
LI	Oct. 4	Oct. 27	19.5 grs.	Oct. 10 to Nov. 10 ...	16	6
LII	Oct. 12	Oct. 29	24 grs.	Oct. 18 to Nov. 25 ... (continuing)	26	18
LIV	Oct. 12	Oct. 29	24 grs.	Oct. 16 to Nov. 24 ...	29	17
LVII	Oct. 6	Oct. 21	20 grs.	Oct. 9 to Nov. 9 ...	21	13
LX	Oct. 20	Nov. 8	27 grs.	Oct. 25 to Nov. 23 ... (continuing)	15	7
LXI	Oct. 16	Oct. 30	19.5 grs.	Oct. 20 to Nov. 24 ... (continuing)	25	17
LXII	Oct. 13	Oct. 27	19.5 grs.	Oct. 16 to Nov. 22 ...	31	21
LXV	Oct. 19	Nov. 8	28.5 grs.	Oct. 23 to Nov. 24 ... (continuing)	25	17
LXVII	Oct. 25	Nov. 12	27 grs.	Oct. 28 to Nov. 20 ...	19	9
LXVIII	Oct. 5	Nov. 18	19.5 grs.	Nov. 4 to Nov. 24 ... (continuing)	16	5

It can be shown from Table I that thirty-eight patients treated with alcresta for the first time became 'negative' on an average three days after treatment began, and showed no cysts in their faeces during a long series of consecutive examinations extending through the period of treatment and for a reasonable length of time afterwards.

Twenty-three of the thirty-eight were negative for three weeks and more after treatment, and it was possible to follow some of them for seven weeks and more. (In one of these cases, sixty-three

consecutive negative examinations were made, forty-one of them after treatment; in another forty-four, thirty-three of them after treatment).

It was not possible to follow the other fifteen cases for such long periods, owing to the demand on hospital accommodation, but the records are very satisfactory so far as they go. Nine remained negative for a post-treatment period of over two weeks; four were discharged after a period of between one and two weeks, and two which have had more than a week's observation since treatment remain negative and are still being examined daily.

None of these thirty-eight cases, then, showed any sign of 'relapse,' and the majority of them have been discharged.

A Note on Case XXIX. CASE XXIX was negative when admitted to the Tropical School Hospital, though he came with a record of 'pathogenic amoebae' from another hospital. After two negative examinations a heavy infection of *E. histolytica* cysts was observed. Six negative examinations followed. It was not until then—after he had begun a negative period unaided—that he was put on alcresta. The course was very short (only 5.5 grs.). During it he had six more negative examinations; and 22 negative examinations followed, before he was discharged as cured. That is to say, he has never been 'positive' since his third examination in this hospital. He has had no less than 34 consecutive negative examinations, and has been discharged as cured, but it is not possible to maintain with any certainty that alcresta was responsible for the clearing up in this case.

B. This section of the fifty-six cases observed after treatment contains eighteen which 'relapsed.' On four of these alcresta seemed to produce so little effect that they passed cysts almost continuously both during treatment and after it.

The incidence of 'relapses' is best brought out by a tabular comparison of the cases, where 'Positive' means that cysts were being passed in the faeces and 'Negative' that they were not.

TABLE II.

	Negative	Positive
Of 69 cases observed at the end of a first treatment	63	6 (8.6%)
Of 50 cases, hitherto negative, observed at end of 1st week after treatment	42	8 (16%)
Of 38 cases, hitherto negative, observed at end of 2nd week after treatment	36	2 (5.2%)
Of 25 cases, hitherto negative, observed at end of 3rd week after treatment	24	1 (4%)
Of 17 cases, hitherto negative, observed at end of 4th week after treatment	16	1 (5.8%)
Of 7 cases, hitherto negative, observed at end of 5th week after treatment	7	0
Of 6 cases, hitherto negative, observed at end of 6th week after treatment	6	0
Of 3 cases, hitherto negative, observed at end of 7th week after treatment	3	0

That is to say, of fifty negative cases observed *after treatment* at intervals of a week, twelve (24 per cent.) relapsed in a period of seven weeks. Or, more comprehensively, to include those cases that were positive at the end of treatment, of fifty-six cases observed after treatment a first 'course' of alcresta failed to clear up eighteen (32 per cent.).

It can be seen from the above table that relapses after treatment occur chiefly in the first and second weeks, and that is why we lay so much stress on keeping the treated case under observation for *at least* two weeks when he is taken off alcresta. While relapses seem to be unusual after the second week, nevertheless one case relapsed on the twenty-fourth day after treatment. Therefore, the cases which have been followed for three weeks and more after treatment are the only ones of whose 'cure' we can feel considerable confidence; although it is reasonable to suppose that the majority of those showing negative periods of two weeks and more are also likely to remain negative in the future. We are the more inclined to regard the two weeks' negative interval as a fairly good criterion of 'cure,' since observations carried out by Malins Smith and Matthews (1917) in this laboratory on untreated cases harbouring *E. histolytica* show in a long series of consecutive examinations only one instance where so long a period as a fortnight elapsed with no sign of a cyst in the faeces.

As indicated above, it seems easiest to consider the eighteen relapsing cases in two groups: (*a*) cases still amenable to further treatment with alcresta, and (*b*) 'refractory' cases, on which prolonged further treatment with alcresta produced no improvement.

This distinction is one of convenience and is rather artificial, seeing that some of the relapsing cases at present in (*a*) may eventually turn out to be 'refractory.'

(*a*) Fourteen cases which relapsed at the end of or after a first 'course,' but cleared up under a second or third, or show signs of doing so (see Table III).

Of cases III, VIII, XX, and XXXV it is not possible to say confidently that they were cleared of cysts when discharged, for the reason that they had to leave hospital before they had been long observed after their second 'course' of alcresta.

CASE VIII, indeed, was transferred while still passing cysts, and we were unable to follow him further.

TABLE III.
'Relapsing' Cases.

Case No. ♦	Treatment with Alcresta			Period of Consecutive Negative Examinations	Total No. of Con- secutive Negative Examina- tions	No. of Con- secutive Negative Examina- tions after Treatment
	Begun	Ended	Total Emetine			
III	Aug. 8	Aug. 20	12.75 grs.	Aug. 19 to Sept. 12 ...	17	16
	Sept. 14	Oct. 4	22.5 grs.	Relapse (Sept. 13) Sept. 18 to Oct. 10 ...	18	5
VIII	June 27	July 26	17.25 grs.	July 13 to Aug. 8 ...	15	5
	Aug. 8	Aug. 16	3.25 grs.	Relapse (Aug. 9) Aug. 14 to Aug. 22 ...	7	5
	Aug. 25	on 3rd course and still		positive when transferred.		
XI	June 23	July 31	15.9 grs.	July 13 to Aug. 11 ...	16	6
	Aug. 8	Aug. 31	4.5 grs.	Relapse (Aug. 16) Aug. 23 to Sept. 19 ...	19	13
	Sept. 21	Oct. 16	37 grs.	Relapse (Sept. 20) Sept. 22 to Nov. 29 ...	46	28
XX	July 11	Aug. 22	40.5 grs.	(continuing) July 24 to Aug. 23 ...	23	1
	Aug. 28	Sept. 10	18 grs.	Relapse (Aug. 24) Aug. 30 to Sept. 20 ...	17	9
XXV	Aug. 9	Aug. 18	6.75 grs.	Aug. 15 to Sept. 7 ...	10	7
	Sept. 13	Sept. 26	18.5 grs.	Relapse (Sept. 12) Sept. 16 to Nov. 22 ...	28	22
XXXV	Aug. 18	Aug. 28	6 grs.	Aug. 22 to Sept. 5 ...	8	5
	Sept. 11	Oct. 10	52.5 grs.	Relapse (Sept. 6) Sept. 13 to Oct. 10 ...	20	0
LII	Oct. 4	Oct. 19	19.5 grs.	Oct. 7 to Oct. 17 ...	5	0
	Nov. 6	Nov. 20	19.5 grs.	Relapse (Oct. 20) Nov. 10 to Nov. 29 ...	14	6
LV	Oct. 6	Oct. 30	24 grs.	(continuing) Oct. 20 to Oct. 27 ...	7	0
	Nov. 23	On 2nd course alcresta.				
LVI	Oct. 6	Oct. 23	19 grs.	Oct. 13 to Oct. 28 ...	7	4
	Nov. 6	Nov. 19	19.5 grs.	Relapse (Oct. 31) Nov. 7 to Nov. 27 ...	17	6
LVIII	Oct. 15	Nov. 7	24 grs.	(continuing) Oct. 27 to Nov. 6 ...	7	0
	Nov. 15	On methyl emetine.				
LIX	Oct. 27	Nov. 8	18 grs.	Relapse (Nov. 7) Oct. 30 to Nov. 15 ...	10	4
	Nov. 27	On 2nd course alcresta.				

TABLE III—'Relapsing Cases.'—*Continued.*

Case No.	Treatment with Alcresta			Period of Consecutive Negative Examinations	Total No. of Consecutive Negative Examinations	No. of Consecutive Negative Examinations after Treatment
	Begnn	Ended	Total Emetine			
LXIII	Oct. 20	Nov. 15	37.5 grs.	Nov. 7 to Nov. 10 ... Relapse (Nov. 13)	4	0
	Nov. 15	On methyl	emetine.			
LXIV	Oct. 19	Nov. 8	30 grs.	Oct. 24 to Nov. 6 ... Relapse (Nov. 8)	8	0
	Nov. 9	On 2nd course	alcresta.			
LXIX	Nov. 4	Nov. 18	19.5 grs.	Nov. 6 to Nov. 20 ... Relapse (Nov. 21)	10	1
	Nov. 23	On 2nd course	alcresta.			

CASE XXXV was discharged immediately after a second 'course' and might be considered in the first section with those cases discharged immediately after their first treatment.

CASE III relapsed after 17 negative examinations, 16 of them after treatment. He then had a further 'course' and 18 consecutive negative examinations were made on his faeces, but only 5 of these were subsequent to treatment, and in view of the long period that passed safely before his first relapse, this second negative period is not conclusive evidence of his having been cured. He was discharged.

CASE XX relapsed after 23 negative examinations, only one of them subsequent to treatment. He then had a further course, and 17 negative examinations were recorded. Nine of these were subsequent to treatment, and it is possible, though by *no means certain*, that he would not have relapsed again.

Cases XI and XXV are, on the other hand, as safely established 'cures' as we can hope to guarantee by observation over a necessarily limited period.

CASE XI relapsed after 16 negative examinations, 6 of them after treatment. He then had a second 'course' of alcresta, and 19 negative examinations were recorded. He relapsed a second time. A third course of alcresta seems finally to have cleared him up, however, since he has had 46 consecutive negatives, 28 of them since treatment stopped. He is still under examination.

CASE XXV relapsed after 10 negatives, 7 of them after treatment. A second course was followed by 28 negatives, 22 of them after treatment. He is still under examination.

Cases LII, LV, LVI, LIX, and LXIX have become 'negative' on a second 'course' of alcresta; LII and LVI, which have finished

their course, remain negative in the meantime, though it is too soon to be confident that they will not relapse.

Cases LVIII and LXIII were put on methyl emetine when it was found that a first course of alcresta had not cleared them up.

Though we are dealing here with much smaller numbers, a comparison of the incidence of relapses after a second treatment brings out the same point as does Table II, i.e. that the weeks immediately following treatment are critical.

TABLE IV.

	Negative	Positive
Of 9 cases that finished a 2nd treatment	8	1
Of 8 cases, hitherto negative, observed at the end of the 1st week after treatment	6	2
Of 2 cases, hitherto negative, observed at the end of the 2nd week after treatment	2	0
Of 2 cases, hitherto negative, observed at the end of the 3rd week after treatment	1*	1

* This negative case was observed to be negative still at the end of the 4th, 5th and 7th weeks.

Of two cases that finished a *third treatment*, both were negative at the end. By the end of the first week one had relapsed. This relapsing case belongs rightly, therefore, to the category of refractory cases, considered below. The negative case remained negative at the end of the second, third, fourth, fifth, sixth and seventh weeks.

(b) In this 'refractory' group there are four cases (IV, VI, XXIII, and XXXI) which have so far defied treatment with alcresta. One of them has been mentioned in Table IV as relapsing after a second and third treatment; the other three have not been included in Tables III and IV, as their treatment has been practically continuous. Cases VI, XXIII and XXXI have now been put on methyl emetine, kindly provided by Dr. H. H. Dale, F.R.S., of the Medical Research Committee; and it remains to be seen whether emetine in this form will effect a cure.

IV. SUMMARY AND CONCLUSIONS

Seventy-six cases harbouring the cysts of *Entamoeba histolytica* have been treated with emetine in the form of alcresta ipecac. given orally.

Of these eighty-one—

- 13 left hospital immediately treatment stopped.
- 12 have not yet finished a first course of alcresta.
- 38 have not relapsed under observation subsequent to treatment.
- 14 have relapsed, *but at least four of these have subsequently cleared up on a second or third treatment*, and some of the remainder may yet do so.
- 4 are completely unaffected by the treatment.

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We have purposely cast Tables I and III in a form similar to that adopted by Dobell (1916) in a recent paper on the 'Incidence and Treatment of *Entamoeba histolytica* Infection at Walton Hospital,' in order that a comparison may more easily be made between the results of alcresta treatment and those of Dale's emetine bismuth iodide on the one hand* and of emetine hydrochloride on the other. (See also Jepps (1916)). While we cannot pretend to rival the amazing results obtained by the use of the biniodide at Walton Hospital (of twenty-five men treated with biniodide of emetine and bismuth *none* relapsed under observation)—our results do compare very favourably with those obtained by the hypodermic injection of emetine hydrochloride—70 per cent. of the cases at Walton Hospital relapsed after this treatment (Dobell), and 57 per cent. at the Kitchener Hospital, Brighton (Jepps).

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* It should be noted that of the cases recorded in the present paper only a small proportion, 14, have so far been on a 'standard' course of 1½ grs. emetine daily for a fortnight. The cases at Walton were all on a standard course of 3 grains emetine bismuth iodide (containing 1 gr. emetine) daily for twelve days.

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